

ing these with a hand-lens as they floated in the water, I was struck with the appearance of a *Mucedo*-like growth with which many of them seemed to be invested. That this, however, was something very different from what it appeared to be, soon became evident; for if the little medusa was touched with the point of a needle, the whole of the flocculent mass would instantly vanish.

It needed, however, a higher power of the microscope to reveal the true nature of the phenomenon, and show that the apparently parasitical growth consisted of the enormously elongated peduncles of the thread-cell-bearing capsules, each of which, as it now proved, had the power, while still carrying the capsule on its extremity, of extending itself to a length which considerably surpassed that of the longer or vertical diameter of the umbrella.

While the medusa continued to float undisturbed through the water, the peduncle would remain projected in a straight line from the tentacle, becoming at the same time amazingly attenuated; but on the least disturbance it would become suddenly shortened to less than the one-twentieth part of its length when extended, drawing the capsule back with it in its contraction.

During the extended condition of the peduncles, they were seen, with their capsules, to be in a state of constant vibration. This was found to be due to a pencil of long, fine vibratile cilia, which, by the aid of a high magnifying power, could be detected on the summit of every capsule.

#### EXPLANATION OF PLATE II.

Fig. 1. *Heterocordyle Conybeari*, of the natural size, growing upon an empty *Buccinum*-shell.

Fig. 2. A portion of a colony, magnified: *a, a*, gonoblastidia loaded with gonophores and extended; *b*, gonoblastidium contracted; *c*, polypite with the tentacles partially contracted, showing that, when in this state, the tentacles assume a clavate form.

Fig. 3. A female gonophore still further enlarged.

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#### BIBLIOGRAPHICAL NOTICES.

*British Conchology, or an Account of the Mollusca which now inhabit the British Islands and the surrounding Seas.* Volume II.

By JOHN GWYN JEFFREYS, F.R.S., F.G.S. &c. Van Voorst.

“SINCE the publication of the first volume of this work I have made two more dredging excursions to the Shetland Isles, a district which is by far the most interesting that I know of for the further investigation of the British Mollusca. In the interval I revisited the south of France, and also went to the Hanse Towns, Denmark, Sweden, and

Norway, for the express purpose of examining public and private collections of European shells, and especially the types of species described by O. F. Müller and subsequent writers on Scandinavian conchology. Every naturalist will appreciate the advantage of such an undertaking, being aware that our own fauna and flora cannot be properly studied apart from that of the rest of Europe. These preliminary remarks are offered to explain the cause of delay in the appearance of the present volume, and likewise to express my grateful acknowledgments for the kind welcome and aid which I received from all the leading zoologists in the countries above mentioned."

Such are Mr. Jeffreys's opening words in the preface to the second volume of 'British Conchology,' which we have the pleasure of introducing to our readers. The work which the author has undertaken is to him a labour of love, and he is determined to spare neither trouble nor expense in order to make it a complete history of the Mollusca of Great Britain. There is no cause to regret the interval of two years which has elapsed between the publication of the first and second volumes. It is evident that that time has been profitably spent in the accumulation of additional knowledge respecting the shells of our coast; and as we have read we have not failed to recognize repeated instances of the value of the results of the author's visit to Scandinavia and his extended dredging in the deep waters of the Shetland Seas.

The volume before us embraces the Brachiopoda (here rightly separated as a distinct class from the Conchifera) and the Conchifera from *Anomia* to *Scrobicularia*, and contains descriptions of 130 species. At the present rate of progress, therefore, we must expect that at least two more volumes will be required to complete the work. The generic and specific descriptions are worked out with great care, and the latter will be found to be both more methodical in arrangement and more concise and clear in definition than those of Forbes and Hanley. The descriptions in this latter work labour under the disadvantage of being too long; and thus, from the prolixity with which minor and comparatively unimportant details are enumerated, the student often finds himself perplexed to discover the chief characteristics which distinguish the species from its allies.

The revised list of the portion of the British Mollusca here described shows considerable diversity from that presented to us, ten years since, by the authors of the 'British Mollusca.' In the interval, Mr. Jeffreys has from time to time published in our pages papers entitled "Gleanings in British Conchology." In these papers were first made known as British many of the species which he now more fully describes in his present work. He has acted wisely, however, in reconsidering the grounds upon which he inserted many so-called species in those "Gleanings," and in reducing them again to the level of varieties; but we venture to think that, having in some instances previously gone to one extreme in species-splitting, he is now showing a tendency to the opposite extreme in striking out of our fauna several well-marked specific forms. The following lists will show the

differences between the species described by Jeffreys in his second volume and those of Forbes and Hanley:—

<i>Species added.</i>	<i>Species excluded.</i>
<i>Argiope decollata</i> , Chemn.	<i>Hypothyris psittacea</i> , Chemn.
— <i>capsula</i> , Jeffr.	<i>Anomia aculeata</i> , Müll.
<i>Pecten Testæ</i> , Bivona.	— <i>striata</i> , Lov.
<i>Lima Sarsii</i> , Lov.	<i>Pecten niveus</i> , Macg.
— <i>elliptica</i> , Jeffr.	<i>Nucula radiata</i> , F. & H.
<i>Limopsis aurita</i> , Brocchi.	<i>Astarte elliptica</i> , Brown.
<i>Arca obliqua</i> , Phil.	— <i>crebricostata</i> , Forbes.
<i>Lepton sulcatulum</i> , Jeffr.	— <i>arctica</i> , Gray.
<i>Axinus Croulinensis</i> , Jeffr.	<i>Mactra elliptica</i> , Brown.
<i>Cardium papillosum</i> , Poli.	<i>Tellina proxima</i> , Brown.

Three of the additions made to our fauna—*Argiope decollata*, *Lepton sulcatulum*, and *Cardium papillosum*—are Mediterranean species, which have hitherto only occurred in the extreme south of the British Islands, off Guernsey; on the other hand, *Lima Sarsii*, *Arca obliqua*, and perhaps *Limopsis aurita* are Scandinavian forms which have now been met with in Shetland; while the four remaining shells have more extended range on our coasts.

The especial attention which has been paid of late years by geologists to the more recent deposits of our islands, and especially to those contemporaneous with and subsequent to the glacial epoch, has led to a great advance in knowledge respecting the connexion of our present fauna with that of the latest periods of geological time; nor have these investigations been confined to the land. The dredge has made known to us the fact that on the sea-bottom all round our shores there are lying, mixed with the dead and living examples of our present fauna, the shells of various Mollusca, often remarkably fresh in appearance, which have apparently ceased to live in our waters. It is often a matter of extreme difficulty to determine whether a species dredged only in a dead state be recent or fossil; and hence it happens that *Hypothyris psittacea*, *Astarte crebricostata*, *A. arctica*, and *Tellina proxima*, together with *Mya Uddevalensis*, *Margarita cinerea*, *Margarita (Skenea) costulata*, *Natica clausa*, *Astyris Holböllii*, *Trophon scalariformis*, &c., have been introduced among our Mollusca, but are now believed to be extinct representatives of more northern existing species, which once lived associated with our recent Mollusca, but gradually died out as the temperature of the waters which surround our coasts increased, and are now no longer to be found living in a latitude so far south.

Most conchologists will also be ready to acquiesce in the suppression of *Anomia aculeata* and *A. striata* as distinct from *A. ephippium* and *A. patelliformis*; but what shall we say to *Pecten niveus* being merged in *P. varius*, *Nucula radiata* in *N. nucleus*, *Astarte elliptica* in *A. sulcata*, and *Mactra elliptica* in *M. solida*? In writing on the first of these changes, Mr. Jeffreys says:—"I fear that some of my conchological friends will be terribly shocked at my

innovation in uniting *P. niveus* with *P. varius*; but I feel constrained to take this bold step, even at the risk of not being soon forgiven. I had for a long time great misgivings on the subject." We greatly regret that his misgivings did not last longer, and can assure him that he was quite justified in his fears, and that his "conchological friends" are "terribly shocked" at his merging the four shells named in their allied species. It is no mere individual opinion we express, but we believe it to be the opinion of all our leading British conchologists, that Mr. Jeffreys has been guilty of a most barbarous murder in the slaughter of these little innocents. Are not the grounds on which these species are reduced to the rank of varieties untenable? It is to this general question that we shall address ourselves, because the limits of a brief review do not permit of our extending our observations to the discussion of the claims of the individual forms to specific rank. There has been an axiom put forward, originating, if we mistake not, from Mr. Alder, that, "if two nearly allied forms live together under the same circumstances, without showing any intermediate forms, the presumption is that they are specifically distinct." This is a sound argument. But the converse of this by no means holds good. It is a most false argument, that, if two nearly allied forms do not occur together, this is to be received as proof of their specific identity. Yet this is the chief ground on which Mr. Jeffreys relies in his amalgamation of the above-named species. *Pecten niveus* occurs throughout the Hebrides, but *P. varius* is wholly absent from the district; *Nucula radiata* is found in Milford Haven, but "always in separate parts of the bay from *P. nucleus*." *Astarte elliptica* has never been met with by the author "on the same ground" with *A. sulcata*; and *Maetra elliptica* is regarded as a deep-water form of *M. solida*. Now we are not prepared to deny—very far from it—the existence of races; but most certainly these cannot be cited as instances of this kind of variation. The allied species in question, if we except *P. niveus*, are found constantly in the same locality, if not actually on the same ground, with the species with which Mr. Jeffreys would unite them; and they are thus associated over a considerable portion of our own seas, as well as northward or southward of them. These, we repeat, are no instances of races, which are synonymous with local varieties. Had it been true that *A. elliptica*, *N. radiata*, and *M. elliptica* occupied a totally different area of distribution from their allies *A. sulcata*, *N. nucleus*, and *M. solida*, then such a fact might be received as an argument that the allied forms were two races of one species. But this is not the fact. The cases before us are examples of nearly allied species which constantly coexist in the same limited area. The fact that they do not live together upon the same ground and have not the same habits must surely be regarded as an evidence in favour of, rather than against, their specific rank. Another point, which it appears to us that Mr. Jeffreys has lost sight of in dealing with these species, is that a number of minor differences become in the aggregate equal to a single more marked character.

In the formation of genera, we find that *Crenella* has been limited,

and receives only the clathrated forms *C. rhombea* and *C. decussata*, while the remaining section is placed in *Modiolaria*, Beck. Similarly *Lucina* has been divided, and its species distributed among the genera *Loripes*, Poli, *Lucina*, Brug., and *Axinus*, J. Sow. These changes appear to be for the better; but we are at a loss to understand why the same author who adopts these genera unites *Modiola* with *Mytilus*, *Artemis* and *Cytherea* with *Venus*, and *Syndosmya* with *Scrobicularia*; for the four genera which he condemns are founded upon equally valid grounds with those which he adopts.

There are two changes in specific nomenclature which appear especially to call for remark. The English *Pinna*, which has already been so frequently renamed, comes before us once more with a new title, as *Pinna rudis*. The author has given us no reason for the adoption of this name, which is remarkable, since another species has hitherto been considered to be the *Pinna rudis* of Linnæus. *Venus Gallina*, Linn., is adopted instead of *V. striatula*, D'Orb.; but Mr. M'Andrew has found these two species in company on several parts of the Spanish coast, each preserving its distinctive characters. Indeed the form of *V. striatula* from the same localities in which *V. Gallina* is found shows a greater divergence from that species than do the majority of examples of the same species as collected on our own coast.

We have now freely handled the second volume of 'British Conchology,' and called attention to points on which we are compelled to dissent from certain views which the author has adopted. Mr. Jeffreys can afford to challenge such criticisms. Indeed we have seen that he anticipated them. His work has too much sterling merit in it for him to fear the discovery of a few subjects of difference between the opinions of himself and those of his brethren of the dredge. We rejoice that a large class of persons who have hitherto been debarred from pursuing conchology by the expensive nature of the only descriptive work on the subject will now find a standard authority brought within their reach; while no experienced conchologist will be able to dispense with Mr. Jeffreys's work, or to take it up without finding its pages full of new and interesting matter.

*The School-Manual of Geology.* By J. BEETE JUKES, M.A., F.R.S. &c. Edinburgh, 1863. 362 pages.

*A Guide to Geology.* By JOHN PHILLIPS, M.A., LL.D., F.R.S. &c. 5th edition. London, 1864. 314 pages.

Both of the authors of the hand-books before us have supplied students with larger manuals, full of sound information in the chief branches of geology; and these more complete works have passed into two or more editions, keeping up with the progress of the science. Here, then, we have geologists, of great experience and good culture, expounding and illustrating the elements of their favourite science, at large for advanced and special students, and in a less elaborate manner for the amateur and the beginner. This is as it should be. There are differences, however, in these little text-

books that characterize them as the works of different thinkers ; and there are peculiarities that may interfere with the fulfilment of their intended usefulness.

Mr. Jukes's 'School-Manual' takes a three-part view of the science, namely:—1st. Dynamical geology, or geological operations now in action, prefaced with a chapter descriptive of the earth as a whole, and comprising, in the chapter on igneous rocks, a brief account of the chief rock-substances ; 2. Descriptive geology, or some of the facts observable in the crust of the earth ; 3. Theoretical or historical geology—the history of the formation of the earth's crust, deduced from the facts observable in it, as interpreted by the operations now going on. This is a philosophical treatment of the subject, and is very well carried out to the extent intended by the author, except in one particular. Chapter 17 treats of the three later Palæozoic periods—the Devonian, Carboniferous, and Permian periods ; but whilst the last two are described and illustrated, the first is replaced by seven pages of technical argument as to whether the "Devonian" strata should have a place in the geological scale or not, geologists not having yet fully examined these beds in Devon, Cornwall, Wales, Scotland, Ireland, and elsewhere. Still the strata and their peculiar fossils do exist ; and whether the divisional lines between them and the Silurian, and between them and the Carboniferous strata, are more or less distinct is of minor importance in a little book like this, where the well-known "Old Red" Fishes of Scotland and the wide-winged Spirifers and peculiar *Clymenice* of the Rhenish rocks should have had their woodcuts like other characteristic fossils. Although the author's chapter on the "Devonian Period" (which he does not admit) reminds one of the famous Hibernian chapter "On Snakes," and a chapter "On Oolite" in a work on the Plymouth Limestones,—the non-existence of oolite being the briefly stated fact, yet the pressing interest of an earnest and honest writer's own views and special work must be taken as an excuse for his rather pointing out difficulties in theoretical geology, in this instance, than following the usual routine of "Old Red" and "Devonian." We think, however, that a notice of the special fossils and sections, with a warning allusion to the doubts entertained as to the exact relationships of the beds, and of their value in geologic time, would have fulfilled the requirements of the case, and thus left the book free of the blemish which all schoolmasters and college-teachers must now feel that it possesses.

In spite of this, however, the 'School-Manual' is admirably adapted to attain the chief object for which it was written—namely, to impart sufficient rudimentary knowledge to excite and guide the faculty of observation with regard to rain and snow, glaciers and rivers, sea-shores and ocean-beds, hot springs and volcanos, lavas and strata, minerals and fossils, so that the young student may get hold of the groundwork of geology, and the grown-up amateur may gain from it a fair general notion of the scope and nature of the science.

Professor Phillips's 'Guide to Geology' first appeared nearly thirty years ago, when elementary treatises by Brande, Bakewell,

De la Beche, and Lyell were its associates, all honestly endeavouring "to seek the proper end of philosophy, by arranging multifarious and seemingly discordant facts into a chain of natural links." (Bakewell.) The speculative geologists had not, at that time, ceased to strongly influence the rising science; and Prof. Phillips, one among the best of observers, kept the hypothetical aspects of many a well-ordered series of facts fully in view; and now even, in his manual for beginners, instead of describing the actual composition and state of the material of which he is treating (for instance, the atmosphere, p. 17, &c.), and giving the student useful practical information about it, he rather enters into a disquisition upon what he considers it was ages ago. Thus certain long-cherished hypothetical views as to the original conditions of land, water, and atmosphere are here as unnecessarily presented for the consideration of juvenile students as the "Devonian" question is in Mr. Jukes's little manual.

In his account of geology, in the 'Guide,' Prof. Phillips first treats of the mass of the globe; 2, the crust of the earth, and its structure; 3, land and sea; 4, climate; 5, the series of life; 6, lapse of time; 7, succession of rocks in the crust of the globe, with many useful little tables; 8, lithology. He does not figure the fossils in this little book, and indeed the woodcuts of manuals are of no use for the identification of species; but he judiciously illustrates his chapter on lithology, in which all the chief rock-substances and common minerals are clearly and concisely described according to their associations.

There is no doubt that Professor Phillips's 'Guide' is fully trustworthy, being very good, though occasionally rhetorical, and often apt to deal with problems that the philosophy of geology rather dreams of than understands. The author, however, clearly states that he intends this little work to help, first, those inquiring what geologists think probable as well as certain in the history of the globe, and what the facts and reasonings are on which these suppositions and conclusions are based; and secondly, the more earnest order of inquirers—real students of nature, desirous of adding to the facts, advancing the reasonings, perfecting the conclusions, and taking part in the actual progress of geology.

## PROCEEDINGS OF LEARNED SOCIETIES.

### ZOOLOGICAL SOCIETY.

Nov. 10, 1863.—E. W. H. Holdsworth, Esq., F.Z.S., in the Chair.

DESCRIPTIONS OF THREE NEW GENERA OF MARINE FISHES OBTAINED AT MADEIRA. BY JAMES YATE JOHNSON, CORR. MEM. Z. S.

#### Order ACANTHOPTERYGII.

Fam. CARANGIDÆ, Günther.

DIRETMUS, gen. nov.

Body much compressed and elevated, covered with small spinous